BRIEF MOTIVATIONAL TECHNIQUES ON ACTIVE-DUTY PERSONNEL FOR THE "SENSIBLE WEIGH PROGRAM": PERCEIVED SELF-EFFICACY, INTENTION TO CHANGE, & ACTUAL BEHAVIOR CHANGE

THESIS

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By

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

The National Heart, Lung, and Blood Institute consider any individual that exceeds a body mass index (BMI) of 25.0 through 29 9 overweight and over 30 0 obese (Strawbridge, 2000). Risk factors associated with being over weight or obese can include cardiovascular disease and diabetes (Guercio, 1999) Despite the numerous medical complications and risks that accompany obesity, the epidemic continues (Foreyt, 1981).

Dietary changes and education have long been considered important in weight reduction disease prevention and However, education alone appears to produce insufficient weight loss and long-term maintenance (Brownwell, 1995) Evidence further suggests that behavior patterns (stimulus cue, over-eating) influence health status. For this reason, research has examined extensively behavior modification strategies in regards to promoting positive health behaviors and weight control (Cameron, 1987) However, people still fail to demonstrate adequate and long-term weight loss with the current behavior modification strategies in use.

Perceived difficulty of adoption of a behavior, such as the behaviors necessary to lose weight, has shown to be a predictor of change (Sennott-Miller, 1986). Improving cognitions may lead to behavioral changes, with more lasting effects In other words, many people report difficulty with increasing exercise and changing food choices to lose

weight. If a program could increase their perceived ability to make these necessary behavior changes, there is a higher chance they will lose weight Brief motivational interventions aim to improve motivation to change by creating an understanding of the problem within the patient. This increased understanding can in turn produce a commitment to change (Rollnick, 1995) Brief motivational interventions offer promising implications- both for the efficacy and the cost-effectiveness of weight control programming.

The United States Department of Defense requires all military personnel to maintain a weight comparable to their Maximum Allowable Weight (MAW). Presently, the Sensible Weigh Program uses the behavior modification approach to promote weight loss However, active duty personnel continue to be discharged based on their inability to maintain the allowed weight (Leshner, 1996). In addition, the process of weight loss and management has proven to be expensive, time-consuming, frustrating, and possibly even dangerous for active-duty personnel

The present research compared the effectiveness of brief motivational interventions with behavior modification/education programming on changing diet, exercise patterns and confidence levels in the short and long term among military personnel Subjects in the motivational group were expected to demonstrate greater weight loss compared to subjects in the behavior modification/education group. This investigator also predicted that subjects reporting high levels of motivation would demonstrate a greater behavior change over three months, regardless of the intervention to which they are assigned Outcome measures include motivational factors such as self-efficacy, intentions to change, weight loss, and actual behavior changes such as food

selection and exercise Secondary factors identify ethnicity, socioeconomic status, and rank on the effectiveness of the motivational interviewing

CHAPTER 2

LITERATURE REVIEW

Obesity in the general population

The National Heart, Lung, and Blood Institute consider any individual that exceeds a body mass index (BMI) of 25.0 through 29.9 overweight and above 30 0 obese (Strawbridge, 2000). A BMI is calculated by dividing the weight of the individual in kilograms by the square of the height in meters. The greatest over-weight population in the U.S. is between ages 30 and 54. Obesity is reportedly more prevalent in women with the most current statistics stating that 60% of the women between ages 45 and 74 are over weight. However, while a lower percentage of men may suffer from obesity, over weight men have 3 9 times higher mortality rate than non-over weight men (Guercio, 1999) Other research finds that 72% of the over weight participants are married couples, and 36% have either some college education or postgraduate degrees (Katz, 1998) In other words, men and women, single and married, educated and uneducated individuals are all affected, none is exempt from being overweight.

Obesity contributes to five of the 10 leading causes of death, the most recognized being cardiovascular disease (DiGioacchina, 1997). As weight increases above normal levels risk factors can include gall bladder disease, endocrine abnormalities, trauma to

joints, and diabetes. Social consequences include embarrassment, anxiety, and depression (Guercio, 1999; Shumaker, 1998; Strawbridge, 2000; VanItallie, 1995).

The relationship between obesity and long-term diseases contributes to escalating health care costs (Allison, 1999). Fifty-two billion dollars is spent on obesity-related conditions. As age progresses in relationship to obesity the "relative per capita costs by age" increases exponentially. This means that each year one continues to be ove weight the costs of health care more than double (Allison, 1999). However, weight loss and management can improve and even prevent long-term diseases related to obesity by lowering blood pressure or glucose levels, which also reduces medication requirements and the number of doctor visits (Oster, 1999). Despite the extensive literature regarding the negative health consequences of obesity, there are few programs in existence which effectively improve weight management.

Adherence to weight control regimen

Research continues to suggest multiple sources for the cause obesity. Although twins research suggests that genetic factors play a significant role in obesity, clearly behavioral and environmental factors are also largely influential (Meyer, 1995). Some studies focus on the effects of abundant food intake and lack of exercise (Foreyt, 1981). However, while food consumption and exercise help to maintain weight (Brownell, 1995; Ross, 1999), psychosocial factors influence one's decision to adhere to the food and exercise patterns for weight loss. Factors such as life stress, negative coping strategies, and emotional (binge) eating seem to contribute to weight gain and unhealthy eating behaviors (Foreyt, 1994).

Other psychosocial factors appear to influence weight control. For example, weight gain and eating disorders are related to family dynamics and marital relationships (Porter, 2000) Personality characteristics appear unrelated (Carlos Poston, 1999), however, dispositional factors such as self-concept (perception), eating self-efficacy, and social support appear to be influential (French, 1995, Goodrick, 1999). Psychological factors that determine food preferences and aversions are difficult to change when adhering to a dietary regimen (Brownwell & Cohen, 1995).

Baylor University developed a program called HELP Your Heart Eating Plan, which focused on the effects of implementing a low-fat diet and its relationship to maintaining the diet over time. Results of the intervention indicated that people were able to adopt a new diet, at least temporarily. However, commitment to this diet decreased after a single year and plasma fat levels, which indicates the amount of fat in the blood stream, even increased above baseline This rise in plasma fat levels suggests that the low-fat diet was unsuccessful in reducing weight loss beyond one year and that subjects even increased their fat intake after adopting the new diet. Studies looking at commitment to a regular exercise program follow similar patterns of results (Shumaker, 1998) These findings suggest that although recommending a diet and exercise regimen can be helpful in weight loss, people still have difficulty adhering to these changes, indicating that other factors may influence the decision and commitment to change

Physicians find it to be a very difficult challenge to convince people to change their diet in order to maintain their weight and overall health While education is certainly important (McCann, 1998), education alone fails to produce adequate weight loss and long-term maintenance (Brownwell, 1995). At a University of Texas Medical Branch,

Paul Cinciripini (1984) examined the influence of labeling nutritional content on self-regulation and changing food behaviors. Results show minimal changes in food choice changes and little commitment to improving eating behavior

Behavior modification for weight management

According to behavioral theories of weight gain, eating behaviors are under the control of the environment combined with the situation and contingency factors. Therefore, whether or not an individual successfully controls weight depends on factors such as the availability of food, influence of family or employment, or the stimulation eating may serve (Foreyt, 1981)

Behavior modification techniques thus attempt to modify an individual's behavior through a multimodal approach Stimulus control and self-monitoring strategies are often used in behavior modification strategies. Stimulus control includes avoiding situations where there is exposure to unhealthy foods or changing the situational factors that may contribute to binge eating (ex: watching television) Self-monitoring includes recording food intake, following a recommended diet, or monitoring the eating pace (Shumaker, 1998). Behavior modification also includes contingency management, which refers to the consequences of dietary behaviors. For example, patients reward themselves monetary prizes for every month he or she drops additional weight (Foreyt, 1981).

Although the behavior modification approach is the most commonly used technique, it has many limitations. Singleton (1987) studied the use of a four-year behavioral contracting approach on the promotion of beneficial health changes in diet and exercise. After attending one counseling session, subjects then signed a "health contract."

The contract period ended when the subject achieved the goal weight or decided to quit Researchers evaluated the success of achieving a contract goal and/or mean weight loss Contracting appeared ineffective in helping subjects reach desired weight loss goals Over half of the subjects dropped out after the first session and half of the remaining subjects dropped out after the third session. The mean weight loss was only 5 5 pounds and 57% of the subjects did not meet their contract weight goal More than one-third of the subjects did not adhere to the exercise contract Of the one-third who did meet the contract goal, one-fourth incorporated an exercise regimen prior to the study (Singleton, 1987). Other studies show similar failure rates and a lack of long-term weight management under the behavior modification approach (Follick, 1984; Foryet, 1981, Graham, 1983, Wadden, 1994) .

Studies done since then find that programs using behavior modification fail to yield significant effects unless the individual demonstrates prior motivation to change his or her behavior (Foreyt, 1994). Motivation is an important aspect of behavior change because it enables an individual to maintain the new behavior under difficult situations. However, most behavior modification intervention styles are not formulated to encourage motivation. For example, research finds individuals report more weight loss when they record both food calorie and weight versus only recording weight. These results show that under continuous motivation, people are more likely to respond to the behavior change (Cameron, 1987).

Another negative factor regarding the use of behavior modification approaches is cost. The behavior modification intervention style is expensive because it requires long-term treatment plans in order for weight loss to occur successfully (Hamilton, 1993) and

few subjects still manage to maintain weight beyond one year (Foreyt, 1981, Graham, 1983; Stalonas, 1987). Furthermore, even when weight loss is evident, it is still difficult to determine whether behavioral intervention actually caused the weight loss

Some studies suggest that behavior modification approaches may actually contribute indirectly to the rise in the prevalence of eating disorders (Foreyt, 1996). People may not be adopting healthy changes, but instead may be adopting more physically destructive behaviors Individuals have been found to binge, purge, and even starve themselves in order to achieve the desired weight. Present treatment techniques put individuals at risk for developing the harmful habits mentioned before because they appear to discount the importance of focusing on important interpersonal and health-related issues regarding weight control, as well as on issues dealing with self-worth, (DiGioacchino, 1997; Foreyt, 1996). It is possible that by addressing such issues (which are intimately related to the person's intention to change) within an intervention style, the basic behavior modification objectives (behavior changes such as changing food and exercise patterns) could naturally result in greater long-term maintenance of weight, healthier lifestyles, and reduced medical costs.

While education alone appears to demonstrate insufficient dietary changes, unsafe means for weight loss, and is costly (Foreyt, 1996 Hamilton, 1993, Katz, 1998, Singleton, 1987), most research shows that weight loss programs use both behavior modification and psychoeducation intervention techniques The psychoeducation approach consists of a didactic method of informing the patient of pertinent information, such as nutritional content, foods to avoid based on unhealthy content, and the best eating schedule

Hamilton at al. (1993) examined a combination of behavior modification and psychoeducation intervention with hypertensive patients. This approach was compared to a minimal intervention group. The outcome measured was the number of appointments kept by each subject indicating how committed they were to the weight loss program Results indicate that the behavior modification/psychoeducation group kept more appointments and physicians considered them more committed to the regimen Upon initial examination, the data is statistically significant However, isolating the behavior modification and psychoeducation results yields little predictive power for success in overall maintenance. In other words, where behavior modification and psychoeducation programs appear successful in short-term weight loss, there is little evidence that these approaches provide greater long-term behavior changes necessary for weight control (Hamilton, 1993; Kalodner, 1991).

Obesity in the military

Within the last 10 years, the Department of Defense has required military personnel to maintain a weight comparable to their Maximum Allowable Weight (MAW). The MAW is based on the individual's measurements, similar to the

calculations of the BMI However, the military has standardized calculations for being over-weight. If these individuals attend their annual physical and they do not meet the MAW, they are required to visit a dietician and attend one psychotherapeutic session An individual has six months to meet the MAW (Hawkins, 1986) or else they may lose a promotion or even be discharged from the military (Davis, 1996, Troumbley, 1990)

Historically, there were few behavioral techniques incorporated for the treatment of over-weight military personnel The physician identified the weight problem, administered a biochemical screen and a brief dietary instruction, and then personnel attended monthly weigh-ins to monitor weight In the late 1970's, researchers began implementing a number of variations of behavior modification and psychoeducation programs that demonstrated better results Tinker Air Force Base found that those who participated in the behavior modification treatment were more successful then those personnel who received dietary instruction alone However, at the four-month follow-up there was no difference in mean weight loss between the two groups (Reppart, 1978)

Most military hospitals currently use a combination of behavior modification and psychoeducation as their primary psychotherapeutic technique for weight management The program focuses on behavioral recommendations for a healthier lifestyle Although the current program proves more effective than previous techniques, the degree to which it has "long-term or true" effectiveness is limited based on the small amount of resulting weight loss and maintenance Meanwhile, active-duty personnel continue to lose promotions and are discharged from services while attending these weight-loss programs Current reports indicate that 22% to 40 % of the individuals involuntarily discharged from the military are still due to being over-weight

The identification and weight loss process is not only costly and embarrassing for the individual, but there is evidence that some individuals may engage in unhealthy practices to attain weight loss. Recent reports indicate a higher degree of bulimic weight-loss behaviors in military personnel compared to the civilian population (Peterson, 1995). Researchers speculate that the pressure to lose weight for professional security exceeds the importance of losing weight for health purposes, resulting selection of potentially unhealthy means for losing weight Some researchers in the field speculate that therapy focusing on the improvement of self-concept and eating self-efficacy could reduce maladaptive behavior such as binge eating and possible eating disorders (Goodrick, 1999).

In response to these issues, the Department of Defense developed the LEAN program. The LEAN program stands for and incorporates Lifestyle, Emotions & Exercise, Attitudes, and Nutrition (Leshner, 1996) The major focus for individuals in the LEAN program is to maintain control over food consumption and adopt long-term lifestyle changes. Tripler Army Medical Center found that many people benefited from the LEAN programs. Patients not only lost weight over a period of 3 weeks, but they maintained the weight loss over a 6 month period (James, 1997). However, in an 18-month follow-up there was only an 8% weight loss in men. No report was given for the two-year follow-up and ethnic and military status results varied. Researchers note that all subjects who participated in this particular study were volunteers and highly motivated (James, 1999). According to previous research, there is variation in intentions to lose weight when comparing volunteer and non-volunteer personnel. However, most personnel on the weight programs are not volunteers (Davies, 1983)

While the military has found many strengths in the behavior modification approach, deficits in using the approach include the extensive need for interaction between the staff and personnel, requiring commitment of staff and funding (James, 1999). Because most research finds behavior modification techniques effective only when long-term treatment is present to produce long-term effects (Kirschenbaum, 1992), the more costly interventions contribute to the escalating weight issue (Troumbley, 1990). There continues to be a need for a more cost-effective intervention that can influence a large population and produce lasting changes without long-term staff commitment (Black, 1986, Hawkins, 1986; James, 1999; Trent, 1993; Troumbley, 1990).

Changing intervention programs-using the physician as liaison

Because of the numerous drawbacks of the behavior modification and psychoeducation approach, the military has been seeking a more effective intervention program In contrast to the historical approach of manipulating behavior as a response to intervention, they are seeking a program which focuses on using the intentions of the patient to predict future behavior.

The current psychoeducation approach focuses on restrictive diets, as well as attempts to monitor or control behavior to produce weight loss. However, as has been stated before, this technique fails to yield positive effects on weight management because the diets and behaviors are not maintained over time (Foreyt, 1994). Black and Threlfall (1986) examined a low-cost program with minimal intervention that focused more on problem solving in contrast to implementing a restricted diet plan. The presence of cognitive experience and outside influences such as physician interaction have been

shown to develop an individual's ability for positive self-direction. The researchers predicted that the problem-solving approach would motivate the subjects to seek outside sources to support their behavior changes for weight loss. Indeed, a self-directed approach to weight loss and maintenance was found to be more successful

A review of the research indicates the positive influence of physician interaction during the behavioral consultation. There are many issues that point to the positive impact of having a physician involved in the program. The consultation itself can serve as a link to educating the patient, showing the patient how to problem-solve, and can assist in the individual's interpersonal struggles. There are also limitations to physician interaction, however, such as money, availability of personnel, and the attitude and values of the patient. Some investigators posit that these limitations could be resolved through the implementation of group therapy, which could also reduce costs and produce motivational factors to maintain the confidence of the patient (Rosenfield, 1991)

The Interaction Model of Client Health Behavior (IMCHB) examined characteristics such as motivation and patient-physician interaction as a predictor for adherence to the Army's Weight Control Program. Patient-physician interaction in the intervention situation was the best predictor for positive weight results (Troumbley, 1992). Meichenbaum and Turk (1987) also found that enhancing the relationship between the patient and the physician improved adherence. Qualities of the physician found important were compassion, communication, initiating motivation within the patient, and giving responsibility to the patient. Evidence shows that a patient responds to treatment beyond basic stimulus-control and other behavior modification strategies. Apparently, the

patient's past and present cognitive and affective characteristics (both those related and those unrelated to food and weight) can predict future outcomes.

The major focus regarding the study of cognitive and affective characteristics is to understand and implement a program for obesity that not only produces weight loss, but incorporates these attributes to the notion of weigh loss and management. The U S Army Hospital in Bremerhaven, Germany attempted to modify and improve upon the current Army weight control program by formulating the Fat Loss and Exercise Program (FLEX). This program originally consisted of a medical screening, one meeting with a dietician, and an exercise program. The formulated FLEX program consisted of a blend of behavior modification, cognitive restructuring, aerobic exercise, support systems, nutrition education and a change in diet. The major modification in the FLEX program is that the cognitive and affective characteristics were incorporated into the new approach, such as the constant interaction and encouragement from the support systems. Results indicated that an immediate weight loss occurred (Davis, 1996).

Although the FLEX program successfully produced weight loss, results from long-term management are inconclusive Availability of support groups and exercise activity is initially convenient and affects the weight loss. However, when the study ceases, the motivation to seek outside sources for continued weight loss diminishes (Davis, 1996). Therefore, although these strategies could be effective, the participants show no indication of motivation beyond the study.

In the Army's Weight Control Program, Troumbley (1990) examines the key differences between overweight and non-overweight soldiers. Results reinforce the lack of long-term effects of weight loss because of the immediate low levels of weight loss, in

addition to the poor physical fitness of the overweight soldiers and the need for a more cost-effective program Finding a significant difference in motivation levels was inconclusive due to the lack of information derived from the measures. It is possible that motivation was not found in either of the two studies, the FLEX program or Troumbley's overweight soldiers, because the treatment did not in fact motivate the soldiers.

According to recent speculations regarding the inefficiency of most behavior modification programs, researchers believe most current interventions incorrectly assume the presence of motivation in the individuals. DeLucia and Kalodner (1990) studied the effects of cognitive intervention incorporated with the current behavioral intervention and its combined influences on the efficacy for weight control. Researchers placed subjects into a behavioral intervention group or a combined behavioral and cognitive intervention group, but found no significant differences between the two intervention groups.

There are two major problems with this research study. The first problem is a design error. The two treatment groups are not different enough to detect statistical differences. There are only marginal differences between control group (behavioral intervention) and the manipulation (the combined intervention). The combined group consists of every factor in the control group with the exceptions of the cognitive restructuring. The cognitive restructuring had little effect alone to show substantial effects and therefore was not clearly defined The second problem is an error in theory. The components of the cognitive restructuring lack confirmation of the motivation of the subjects. The researchers propose alternative ways of approaching the situation other than having the subjects introduce the problematic issue themselves. Therefore, there is no

indication that the subjects incorporated the cognitive restructuring within the diet plan that acted as the motivation to change.

While some individuals lack the initial motivation to lose weight, starting and maintaining a weight management program can prove difficult for even the most motivated person (Guercio, 1999) Recent research by Maisto et. al. (1999) found that prior to intervention, the stage of change or motivation predicts future weight loss and management.

Stages of change is a theory developed by Prochaska (1985) that suggests one can predict the outcome of individual's commitment to change based on a model of stages. Within these stages, individuals exhibit characteristics of a potential level of change These stages are: Pre-contemplation Stage, Contemplation Stage, Action Stage & Maintenance Stage. Most research finds that a large portion of at-risk populations for obesity are at the Pre-contemplation stage and demonstrate little commitment to change. However, the small percentage of the people in the Action stage demonstrate stronger commitment to change and perhaps respond to treatment without the need to induce motivation (Prochaska, 1994). Again, patterns in exercise commitment also resemble the stages of change or motivation (Cardinal, 1997). Therefore, the evidence suggests that in order to have a larger percentage of the over-weight populations respond to the intervention programs, providing "the means to change" might prove more successful (Brownell, 1995).

Based on these results, the formulation of a new intervention technique that successfully shows compliance with a weight loss regimen might benefit from

incorporating a shift in motivational factors and identifying patient's readiness to change (Shumaker, 1998)

Self-efficacy in weight management

The objective of a new intervention style is to promote weight loss and long-term management while incorporating a healthy lifestyle According to recent research, readiness of the individual to change determines the factors that influence long-term maintenance of weight control These include self-efficacy, level of commitment, and motivation (Pendleton, 1998) The theory of emphasizing self-efficacy focuses on developing self-efficacy within the patient (ability) in order to initiate the level of commitment (intention) and increase the motivation necessary to achieve the desired weight and long-term maintenance (behavior change) (Brownell, 1995)

Self-efficacy is the individual's judgement that he or she is capable of achieving a desired goal (O'Leary, 1985). The theory originates from Bandura's cognitive-social learning theory which states that thoughts or mental processes about the environment are important in predicting behavior (Bandura, 1977) Numerous studies found that low self-efficacy had highly predictive values with continued addictive behaviors (David, 1991) and was highly prevalent within the eating disorder populations (O'Leary, 1985) Only recently have researchers discovered the importance of perceived self-efficacy in relationship to being over weight

There appears to be a strong relationship between self-efficacy and weight loss According to a study by Cowan et. al. (1997), 75% of the participating subjects in their study were in the "nonaction stage" for exercise and 85% of these subjects reported low

to moderate exercise self-efficacy In support of Cowan's results, Mitchell and Stuart (1984) studied self-efficacy in relationship to the dropout rate in a weight loss program. Their results indicated that the large portion of dropouts reported low self-efficacy, meaning they felt less likely to succeed, and demonstrated little behavior change. As well, patients with bulimia scored low on perceived self-efficacy questionnaires (Phelan, 1987).

The lack of perceived self-efficacy appears to affect the ability of an individual to adopt a behavioral change necessary for weight control. It follows then that raising self-efficacy would show positive effects on controlling weight and feeling in control of one's weight. The essence of raising self-efficacy is to provide the patient with an internal locus of control over eating behaviors for lasting results (O'Leary, 1985) Weinberg et. al. (1984) examined weight loss in individuals who experienced manipulations in their perceived self-efficacy on weight loss. In this study, subjects were administered an assessment battery for "shaping of self-efficacy" The manipulated group lost more weight over time. As well, those who reported higher internal locus of control prior to the manipulation had a greater mean weight loss

Research indicates that in order for a behavior to change, the individual must acquire a new substitutive behavior. In order to acquire a new behavior, however, the patient must adopt long-term commitment (Cowan, 1997) In turn, the longer the commitment the greater chance of acquiring the new behavior successfully Reports indicate that most relapses are due to the difficulty of changing habitual behavior Brownell and Cohen (1995) suggest that interventions that incorporate the new behavior to overall different lifestyles have a higher commitment over time. Allowing the patient

to formulate and direct the necessary areas for change themselves and negotiating their plan does appear to provide a greater commitment to change (Miller, 1991). Therefore, the patient must commit time and effort in order to acquire this new behavior However, commitment alone will not aid the patient through the difficult challenges of change Here, initiating intrinsic motivation can be effective in challenging situational factors that might deter weight loss and management.

Responsibility to change appears to be the primary motivational factor involved in weight control (Miller, 1996) Motivation is considered a malleable state of wanting to change and corresponds with adherence. As well, motivation is analogous to the "probability of certain behaviors" In other words, if the person is highly motivated, one can predict that he or she has a greater probability of adhering to a regimen Researchers claim that effective motivational techniques include giving advice, removing barriers, providing choices, decreasing desirability of the unwanted behavior, practicing empathy, providing feedback, and an active helping attitude from the physician (Miller, 1991). Therefore, a physician's ability to produce and maintain motivation throughout a behavior change is important for weight loss and management

Brief Motivational Interventions

Researchers have been studying brief motivational techniques as a new approach for aiding successful behavior changes. Motivational Interviewing was originally used for patients who battled with alcohol abuse and other addictions Rollnick and Miller (1995) define motivational interviewing as a "directive, client-centered counseling style for eliciting [behavior] change by helping clients to explore and resolve ambivalence". They

continue to describe this type of psychotherapeutic approach as directing the session towards the essential goal, behavior change, by resolving ambivalence. The counselor does not coerce the desired behavior change but instead the client initiates the change. The counselor is present in order to guide the client When the client decides to change, the resolution of ambivalence follows (Miller, 1994). Techniques include reflective listening, reinforcing the client's own motivational statements, and affirming the client's acceptance and self-direction (Rollnick, 1995).

Most people who lack the motivation to change are in the Denial stage of change. The objective here is to resolve ambivalence in order for the client to motivate towards the Action stage (Miller, 1994). In a multidimensional intervention for eating disorders, researchers found that by focusing on the patient's ambivalence towards treatment, their self-direction and influence on the treatment produced significant behavior changes (Garner, 1982).

There are additional studies that demonstrate the potential for positive motivational techniques to guide behavior in military personnel Sarason et. al (1986) conducted a study on the effects of recording and recalling positive and negative events on military cadets' performance and self-evaluation In the first study, the groups were divided into positive and negative recall of a personal event. The group who reported positive recall demonstrated higher performance and greater resistance when presented with a maze task In the second study, the same researchers exposed the subjects to the same manipulation, but instead they examined self-description. Results show that positive self-monitoring is related to positive self-description, while negative self-description was related to negative self-monitoring.

The study on recall used a brief intervention for each experimental group in order to perform the study (Sarason, 1986) Motivational interviewing also uses a brief intervention technique. This type of technique, although not as lengthy as historical approaches, such as the psychoanalytic approach, proves effective in behavior change Research demonstrates the need for a long-term program because aspects such as self-monitoring are temporary and cease when the program ceases affecting long-term changes (Castro, 1980). On the other hand, due to the techniques involved with motivational interviewing, brief intervention proves effective with minimal long-term contact (Rollnick, 1995)

Not only can brief interventions show long-term behavior changes, but they can also prove to be cost effective. Belisle et al. (1987) examined the improvement of adherence to physical activity through increasing self-efficacy. Both groups followed a 10-week exercise plan; however, the experimental group was provided feedback on how to cope with obstacles and problem solve. After three months, the experimental group demonstrated higher exercise adherence after the program ceased compared to the control group Due to the long-term success of the treatment, the brief intervention also proved to be cost-effective. According to the results, the "cost-benefit ratio" of the intervention were estimated at $3.33 per client (this calculation also includes the training of the counselor). The effects of the treatment were successful beyond contact with the professional Further research suggests that physicians have been shown to increase efficacy in as little as one session (Miller, 1994)

Self-efficacy or confidence that one can successfully change behaviors such as dietary and exercise patterns to lose and maintain weight has been shown to predict future

weight loss (Edell, 1987). Furthermore, improving perceived self-efficacy corresponds to a greater mean weight loss and long-term maintenance (Bernier, 1986). Researchers speculate that self-efficacy is not only based on previous experience, but also on situational experience. In other words, how capable a person feels he or she can respond to stress or unexpected events that contribute to maladaptive behaviors also predicts future success of weight management (Sherer, 1982). Therefore, the objective of brief motivational interventions are to direct the client towards perceived control of his or her eating behavior (Glynn, 1986) based on perceived capabilities for initiating future behavior changes.

Group therapy has also shown significant effects on behavior changes. Pinderhughes (1982) examined the influences of social systems on behavior change, and developed a hypothesis on group-related behavior Through his observations, he found that a significant portion of the individuals who prior to a presentation disagreed with the rationale of the presented information were able to resolve their group differences and produce cohesiveness by establishing a group relationship. He predicts that previously unstable conceptualizations can be influenced and conformed through intergroup relations. Based on these observations, a brief group motivational intervention geared towards weight management might prove more effective than the current behavior modification approach.

Scope of the present study

The psychotherapeutic intervention currently implemented by the behavioral medicine team at Wilford Hall Medical Center for weight loss of the active-duty

personnel is a behavior modification and psychoeducation program. Research suggests that raising an individual's self-efficacy can enhance his/her motivation necessary for long-term weight management, and the individual can continue to control weight even after the actual intervention ceases. This shift in techniques may prove more effective in weight loss and management, as well as actual behavior change. It may also raise the self-efficacy of personnel more effectively than the current behavior modification and psychoeducation approach.

The present study aims to apply a brief motivational intervention on groups of active-duty personnel for weight control as an alternative to the current behavior modification /psychoeducation program The study is designed to examine intentions to change, actual behavior change, and weight loss on group settings. The brief motivational intervention also attempts to influence self-efficacy and motivation as positive predictors for future weight loss and perceived self-efficacy

CHAPTER 3

METHODS

Participants

Fifty-one active-duty personnel from Wilford Hall Medical Center in San Antonio, Texas were assigned to the present study from the "Sensible Weigh Program" (SWP) The racial/ethnic representation of the participants was deemed to provide a satisfactory representation of the military population, based on the statistical analysis of Lackland Air Force Base's population The San Antonio active duty personnel population identify themselves as 66% Caucasian, 19% African American, 9% Hispanic, and 6 percent Other. The overall numbers of Officer personnel compared to Enlisted personnel at the three target bases indicate that there are approximately 10% more officers in this population than compared to the total Air Force population The male to female ratio is 4:1

Treatments

Psychoeducation Intervention

The behavior modification/psychoeducation was the current intervention program, which consisted of behavior modification tips, a didactic teaching style and little subject-speaker interaction A speaker presented a PowerPoint presentation that focused on

specific behavior modification techniques for weight management Insert Table 1 here The presentation was followed by distribution of a handout that listed tips for weight control Insert Table 2 here

Motivational Interviewing Intervention

The brief motivational intervention consisted of a trained motivational interviewing leader who directed the group discussion, but encouraged contributions from the subjects to maintain the discussion. After introducing himself, the leader stimulated a group discussion regarding barriers to weight loss, followed by a discussion regarding strategies to help remove the barriers Techniques included directing feedback, reflective listening, finding areas of ambivalence, discussing coping strategies, and maintaining group involvement. Insert Table 3 here

Measurements Components

Informative predictors

Informative measures consisted of questions regarding basic demographic questions such as age, rank, weight, height, gender, and ethnicity

Behavior change

Behavioral measures consisted of questions regarding patterns of exercise and dietary intake. Questions were extracted or modeled from the 7-Day Physical Activity Recall Questionnaire (Johanesen, et al , 2001). Questions included self-reported frequency of exercise per week and self-reported amounts of servings for specific foods like vegetables or fruits

Intentions to change

Intention measures consisted of questions regarding Prochaska's Stages of Change theory and self-reports of self-efficacy levels Questions on self-efficacy were extracted or modeled from questions from the Weight Efficacy Life-Style Questionnaire (WEL) and Exercise Efficacy Questionnaire (Clark, et al , 1996) Questions included self-reported ratings regarding how successful they felt in participating in certain weight related behaviors Ratings were made on a scale from 0 (not confident) to 9 (very confident)

Procedures

Each participant was assigned to either the motivational group or the psychoeducation class, with the assumption that between group differences would be negligible The researcher determined the order in which each intervention was presented by using the random numbers table and appropriate calculations. Insert Table 4 here

A pilot study was collected on the current psychoeducation intervention for the purpose of confirming the dependability of the instrument and its reliability regarding the subjects and research questions

During the actual intervention, researchers distributed a folder to each subject with a corresponding number Each folder consists of a consent form, the first and second questionnaires, and the third and final questionnaire in a stamped and addressed envelope The first questionnaire consisted of informative predictors, intentions to change and actual behavior change questions Insert Table 5 here The second questionnaire consisted of identical intention to change questions and additional behavior change

questions. Insert Table 6 here. The final questionnaire was a combination of the first two questionnaires. Insert Table 7 here

All materials were labeled with a single corresponding number for each subject. Subjects were then instructed to carefully read through the consent form and voluntarily sign if they were willing to participate in the study. Insert Table 8 here. The researcher then asked the subjects to fill-out the first brief questionnaire that consists of the intention to change questions, behavior questions, and brief information questions. Following the subjects' completion of the first questionnaire, they remained for the assigned intervention.

After the 1 ½ hour class ends, each subject was then asked to open the folder and complete the second questionnaire that focuses on intention to change and its differences following the intervention. Subjects then left with a copy of the consent form for their records and the stamped and addressed envelopes to be returned in one month

Approximately one month after the intervention, the researcher called the phone number written on the first questionnaire and reminded subjects to complete and mail the final questionnaire materials

The researcher examined 1) pre- and posttest differences for intention to change within one session between the two intervention groups; 2) pre- and post-test differences for intention to change and actual behavior change over time between the two intervention groups; and 3) overall future differences in motivation and self-efficacy as predictors for actual behavior change.

CHAPTER 4

RESULTS

Pilot Study

The reliability analysis for the pilot study suggests that 98% (r= .98) of the total variance can be accounted for true variance The standard error of the measurement is .04 (SEM=.04) meaning that we can be 96% confident the results are due to true scores.

Descriptive Statistics

There was an equal distribution of males and females (25 female, 25 male). Regarding ethnicity, the two groups were composed of 60% white, 20% Black, 16% Hispanic, and 2% other. Seventy percent of the subjects were enlisted. Marital status of the subjects was divided into 26% single, 58% married, and 7% divorced. Regarding weight status, 42% of subjects were 21 or more pounds (lbs) over their MAW, 26% were 15-20lbs over, 10% were 11-15 lbs over, 4% were 6-10lbs over, and 16% were 0-5lbs over their MAW.

Slightly over half (56%) of the subjects claimed to regularly do strength and flexibility exercises such as sit-ups, push-ups, weight lifting, yoga, or stretching. Twenty-six percent reported exercising for at least 30 minutes 3 to 4 times per week of a moderate cardiovascular workout. Sixty percent of subjects reported that this was a

typical week in terms of their pattern of exercise. In addition, 88% claimed to presently exercise and had reportedly been doing so for at least a month.

Slightly less than a quarter (22%) of the subjects reported eating 5 servings of vegetables and fruits each day for at least 5 days per week, while another 22% reported eating 5 servings each day for only 2 days per week. Regarding fat intake, 24% of the subjects claimed to have eaten below the recommended percentage of fat grams each day for a total of 5 days a week. Sixteen percent of subjects reported their rate of fat intake at only 3 days. In terms of monitoring their food patterns, 28% reported that they do not currently engage in this behavior; however they reportedly intend to start within the next month. Over half the subjects (68%) claim they currently do monitor their food pattern.. Finally, 84% reported their time of assessment as being a typical week in terms of their fat intake.

Intervention Differences

There were 29 participants in the motivational interviewing group and 21 in the psychoeducation group. There were no significant differences on any measures between the two intervention means at the pretest (MI=79.10, PsychEd=76.86) with homogeneity of variances insignificant ($t=(48).56$, $p>.05$). This suggests a baseline that both groups are equal before the intervention. The reliability analysis across both groups at the pretest was 74% ($r=.74$) and at the posttest was 86% ($r=.86$).

The questionnaires were not identical on the pretest and posttest, therefore analysis of covariance was employed to analyze the posttest scores while statistically

controlling for pretest scores. However, this approach does not evaluate how much difference or the extent of change between the two groups, only if there is a significant difference between the two groups at all. According to the calculations, no overall differences were found between the two groups ($F=(1, 47)1.5$, $p>.05$) and the means actually came closer together (MI=140.72, PsychEd=140.85).

There were significant differences found between the two groups in the perceived change of confidence to lose enough weight to get off the Weight Management Program following the intervention ($F=(6, 42)$ 3.14, $p<.05$). Here the data suggests that there is a greater disparity in means between the two groups. This means that although there was not an overall difference between the two groups' change in total perceived confidence, there was a difference in regards to the single variable of perceived confidence to lose enough weigh to get off the Weight Management Program.

Although, there were few overall differences found between the two interventions, there were changes in motivation and self-efficacy after a single intervention despite which group each subject participated. For example, those who reported a higher level of intention to change, who were currently monitoring their food intake and already exercising, showed a greater change in confidence following the two interventions ($F(1, 47)=9.12$, $p<.05$). As well, those who reported being married also showed a greater change in overall confidence following the two interventions ($F(4, 45)=2.46$, $p<.05$). Similarly, those who already reported they were more confident they could lose enough weight to get off the program showed a greater change in confidence after the two interventions ($F(7, 42)=6.54$, $p<.05$). Finally, there appears to be

a negative relationship between rank and total posttest scores ($t(48)= -2.057$, $p<.05$). As rank increases, the level of confidence and motivation decreases.

Future differences

Only 6 of the 51 subjects returned their one month follow-up questionnaires. Therefore, I had insufficient data to determine actual behavior changes and future predictors of motivation and self-efficacy after one month. However, there are some patterns of responding between the groups.

Factor Analysis

Five factors were found using factor analysis. Factor 1 could be labeled Self-Efficacy for Dietary Adherence (r=82). Statements include: "Stick to an exercise program even when your family is demanding more time of you; stick to an exercise program even when you have excessive demands at work; I can resist eating when there are many different kinds of food available; I can resist even when there are high calorie foods available; and I can decrease my fat intake". Factor 2 could be labeled Self-Efficacy for Resisting Obstacles to Adherence (r=.82). Statements include: "Stick to an exercise program even after a long, tiring day at work; get up early, even on weekends; exercise even though I am depressed; I can resist eating even when I am in pain; and I can control my eating on weekends". Factor 3 could be labeled Self-Efficacy for Specific Behavior Change (r=.77). Statements include: "I can set aside enough time for physical activity programs for at least 30 minutes 3 times per week; I can exercise 3 times per week; I can

increase my fruit and vegetable intake; and I can resist eating when I watch television". Factor 4 was labeled Self-Efficacy for Managing Distracted Eating (r=.67). Statements include: "I can resist eating when I watch television; I can resist eating even when I am reading; I can resist eating just before going to bed; and I can resist eating even when I have to say "no" to others". The last factor, Factor 5 was labeled Self-Efficacy for Intentions to Change (r=.86). Statements include: "I presently exercise and have been doing so for longer than one month; I presently monitor my food pattern and have been doing so for longer than one month; and I can lose enough weight to get off the Weight Management Program".

There was a significant difference between groups and Factor 1 ($F(1, 47)=7.85$, $p<.05$), with the psychoeducational group outscoring the motivational interviewing group on this factor (.33 vs. -.27). Based on the scales, motivational group actually dropped in overall self-efficacy regarding weight management changes such as resisting high fat foods and sticking to an exercise regimen.

CHAPTER 5

DISCUSSION

The purpose of this study was to establish if there were significant differences between the current Behavior Modification/Psychoeducation approach, and to determine the impact of motivational interviewing techniques on perceived self-efficacy and motivation. It is unclear based on this study alone whether motivational techniques improve or even change these specific weight management variables. Statistically, there is not enough change to make a significant difference. However, in process, there is the possibility that change has occurred. For example, maybe people are changing from the pre-contemplation stage to the contemplation stage. There is not enough change to detect statistically, but if we could examine the subjects over time we might find they continue to oscillate through the stages if change.

As well, it is clear that regardless of the group there are some active qualities that do seem to influence perceived confidence. For example, those who reported a higher level of intention to change, meaning they were currently monitoring their food intake and already exercising, reported a greater increase in confidence following both interventions. However, when asked more specifically if they were exercising 3 to 4

times a week for 30 minutes or more, not even a third could respond positively. Thus, there seems to be some discrepancy between intentional and actual behavior contributing to the lack of effective weight management. Again, a great majority (two-thirds) of subjects reported that they already monitored their food intake. However, when asked more specifically if they have eaten under the daily recommended percentage of fat for at least 5 days this week, only 16% reported doing so. Despite the mismatch between perceived and actual behaviors, these subjects still demonstrated an increase in confidence after both interventions.

Those who were married also showed a greater increase in confidence following both interventions. The married population was the largest group in the program. This is consistent with the literature that suggests support might foster commitment, especially for those in the latter stages of change. These results must be interpreted with caution, however. With the single and divorced groups being so small, this does not rule out the possibility that these marital situations also affect confidence and commitment.

Like the married subjects, those who reported at the beginning of the class that they were more confident they could lose weight to get off the program showed a greater change in confidence after both interventions. This has important implications regarding pre-existing motivation. The literature clearly indicates that losing weight is difficult and relapse rates are high. However, there may be pre-existing perceptual factors related to confidence which influence those willing to stick to a program. If we can structure weight programs to influence participants' perceptions regarding weight loss and thus increase their confidence, we may possibly see better results.

Finally, there appears to be negative changes between a person's military rank and their confidence following intervention. As rank increases, the level of confidence and motivation decreases. Based on my observations of the classes, I would say this is consistent with the subjects' reports. The subjects who have been in the military for a longer time may feel they have more to lose, e.g. retirement. Maybe age and lifestyle are not the active components, but rather the feeling of doom that they cannot accomplish such a task.

On a final note, the fact that only six of the 51 subjects responded to the follow-up questionnaire is indicative of the overall lack of commitment most of these people may feel towards the program. I speculate lack commitment is the basis for this outcome, however this variable requires further research to identify a more clear explanation.

I found five factors that suggested some clear distinctions in response patterns. The first two major issues subjects focused on appeared to be confidence to change their diet and stick to it (Factor 1), and confidence to maintain adherence despite encountering emotional obstacles such as pain and depression (Factor 2). In addition, subjects seemed to consistently report on their perceived confidence to make specific behavior changes such as increasing their fruit and vegetable intake (Factor 3), and their perceived confidence for changing longstanding habits (Factor 4). Finally, the strongest response pattern was perceived confidence in subjects' intentions to change enough overall to lose the necessary weight to leave the program.

These factors or response patterns are important because they give insight to the major barriers active-duty personnel experience during the weight loss process. For example, one way to utilize this information is for the purpose of structuring the classes.

Because the psychotherapeutic intervention is only a brief time (one and ½ hours), one might quickly address the barriers and immediately move to other motivational techniques such as providing feedback or removing ambivalence. Thus one could spend more time discussing coping strategies specifically in regards to these identified barriers.

While the first hypothesis regarding the motivational group versus the behavior modification/psychoeducation does not bear out, it is also not disconfirmed. First, the results are consistent with the literature suggesting that the behavior modification/psychoeducation combination does in fact show immediate behavior change/weight loss. However, the more pressing issue is the effectiveness of long-term management. Due to the low number of returns on the follow-up questionnaire, the results regarding long-term effects are inconclusive on this issue. Second, it is possible that more subjects might be more effective in increasing the subject to variable ratio, that would allow for identification of even immediate differences. Finally, it is possible that the motivational techniques used by the instructor were not effective or thorough enough in practice. For example, if leaders and subjects were only able to identify barriers, but not enough time was spent on providing constructive feedback, the process would have been incomplete. Further control of the treatment objectives in theory might show more true experimental differences.

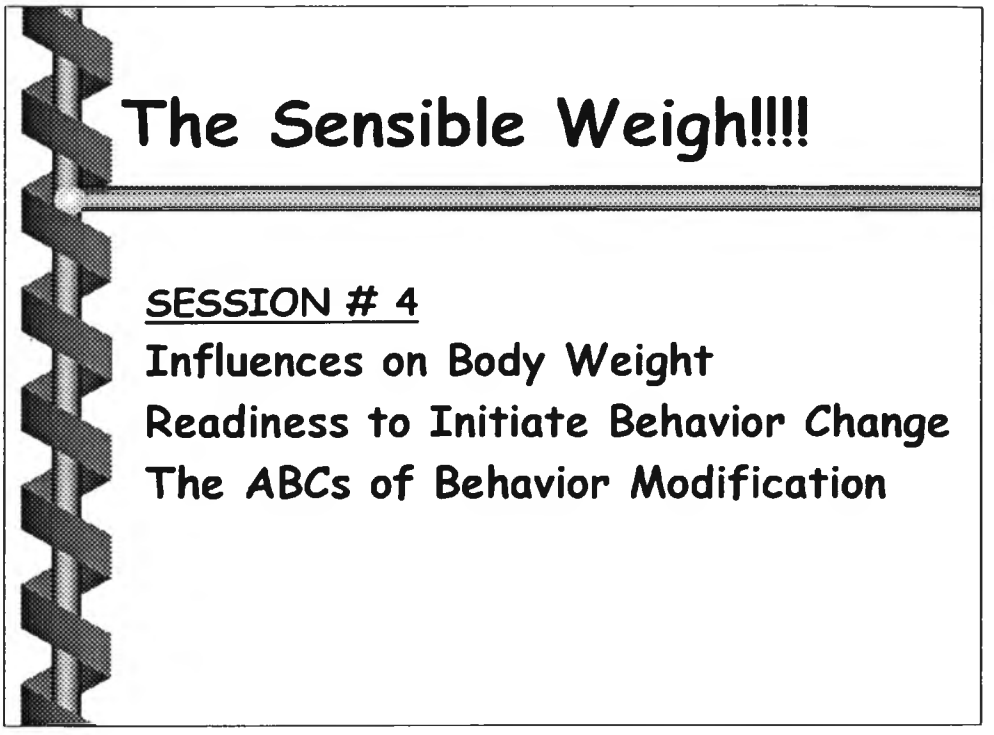
Without ruling out motivational techniques entirely, the study demonstrates strong evidence that confidence and motivation are strong predictors for readiness to change. Where actual behavior change might not yet be evident, intentions to change appear related to the weight loss experience. As well, perception of confidence and motivation are interesting factors that warrant further examination. Increasing participants'

confidence increases their motivation and commitment. There are also seems to be some persisting misconceptions. For example, although subjects reported that they currently do exercise and feel they are doing all that they can, in practice, they are still not meeting the necessary standards to physically lose weight (ex: exercise 3 times per week for 30 minutes). Perhaps by explicitly and concretely explaining how to exercise, such as how much exercise and what kind of exercise, will create a better understanding for personnel regarding what is necessary to actually lose weight. As well, by utilizing the demographic information, we might be able to gear the intervention to that particular group. For example, the instructor could use examples for change consistent with the everyday dynamics of a married household.

In summary, weight loss and management proves a difficult task, which is often not associated with long-term success. There seems to be some kind of a gap between what intervention style to use and how people internalize this information as a resource for weight control. Further research is necessary to better understand the clinical application of motivational techniques for weight loss in active-duty personnel.

Table 1

Behavior Modification/Psychoeducational Intervention Itinerary



Behavior modification and weight management are clearly closely linked since two of the major contributors to our weight (exercise and eating) are basically behaviors.

My goal today is to discuss three topics:

1) provide an overview of factors we like to consider when assisting persons with their weight loss goals;

2) discuss the importance of being ready to make behavior change; and

3) provide one example of a specific behavior modification technique with weight management.

At the end of the presentation, I will also provide you with information regarding a weight management program offered here on base that takes into account these behavior modification principles (in case you decide you would like to learn more about this approach to weight management).

First, let me ask: (Q) What factors do you think influence your body weight?

(Generate discussion and lead into next slide)

Table 2

Behavior Modification/Psychoeducational Intervention Program Guideline

Behavior Modification for Weight Control

1. Do Nothing Else While Eating
2. Eat in the Same Place Each Time
3. Do Not Clean Your Plate
4. Eating on a Schedule
5. Slow Your Eating Rate
   - ★ Put your fork down between bites
   - ★ Pause during the meal
   - ★ Savor each bite

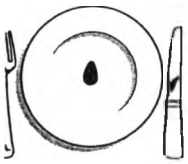
When Shopping for Food:

- Shop on a full stomach
- Shop from a list
- Shop for foods that require preparation

When Storing Foods:

- Store high-calorie foods out of sight *(out of sight, out of mouth)*
- Keep healthy snacks available

When Serving and Dispensing Food:



- Remove serving dishes from the table
- Leave the table after eating
- Serve and eat one portion at a time
- Wait five minutes before getting second servings
- Avoid dispensing (serving) food

When Eating Away from Home:

- Order a la carte meals
- Watch the salad dressing
- Watch for hidden calories
- Watch your alcohol consumption
- Beware of the breadbasket
- Be wise with dessert
- Engage your partner

Table 3

Motivational Interviewing Intervention Itinerary

Motivational Interviewing for Sensible Weigh

* * Use the outline below as a guide not a strict manual.

Class Outline:

1) Introduce self and your experience with weight loss professionally or personally (keep personal info brief)

2) Start with some basic background. Successful weight loss entails lots of small to large behavior changes (exercise, changing the amount, frequency, or types of foods you eat, cooking differently, finding new ways to deal with stress, etc..) Often, there are many good reasons to lose weight (e.g improved health, stay AD, look better) but there can also be many barriers or reasons not to change (e.g too little time, family doesn't like "healthy food", its overwhelming and lots of work).

3) Weight change can be a particularly challenging change b/c you can't just go "cold turkey." Food is essential for survival, reminders are everywhere, food can have a central role in celebrations, and certain foods may have cultural significance.

4) Let the class know that you want it to be very interactive as the expectation is that each participant has lots of practical expertise in the area. Most people know to eat less and exercise more. The hard part is how to put that into practice in a meaningful and successful way As we go along, I hope you will free to discuss not only what has worked for you but also what has been difficult.

5) List barriers to weight loss on the flip chart.

    a. Look for self-motivational statements given as discussing barriers. You can highlight now or remember for later.
    b. Pay attention to statements of ambivalence and look for opportunities to use reflection to heighten the discrepancy between wanting to change and not wanting to change Try to pick areas that may have general group relevance.
    c. Watch out for cheer leading or advice giving particularly in regard to the WMP. Roll with the resistance, as this group may be very resentful for the WMP and having to attend the class. Remember that your job is not to convince them of anything but help them look at what decisions and changes they may want to make.
    d. Look for opportunities to reflect with a twist or reframe the resistance to move you out of a confrontational roll with the patient

6) Review barriers and then ask about reasons to change trying to highlight what makes it worth it and what serves as motivators. List these on the board and use

this as an opportunity to highlight reasons to change despite barriers. Heighten the discrepancy and look to capitalize on self-motivating statements.

7) Now move into having the group express and develop strategies and plans that may help with the barriers or maintain motivation. If the group is small enough (15 people or less) have each participant discuss their personal change plan. If the group is larger you can list some of these plans on the board. Again, find opportunities to highlight self-motivational statements.

8) As you go through the plans you can refer to the handout as some suggested ways to change their approach to food.

9) Allow for opportunities for questions at the end.

Table 4

Randomization for Motivational Interviewing and Behavior Modification

1. Jan MI
2. Feb Didactic
3. Mar MI
4. April Didactic
5. May MI
6. June Didactic
7. July MI
8. Aug MI
9 Sep Didactic
10. Oct Didactic
11 Nov Didactic
12 Dec Didactic

Table 5

Questionnaire #1.

Rank:_____
Age:_____ Gender:_____
Height._____ Weight:_____
Race: White_____1
Black_____2
American Indian_____3
Hispanic_____4
Asian_____5
Other_____6
Marital Status_____Single_____Married_____Divorced_____Widowed

1) How many times have you been on the Weight Management Program?
Never Once Twice Three or more

2) How many pounds are you over the Maximum Allowable Weight?
0-5 6-10 11-15 15-20 21 or over

3) Do you regularly do strength and flexibility exercises like sit-ups, push-ups, weight lifting, yoga, or stretching? YES NO

4) How many days a week do you do at least 30 minutes moderate cardiovscular exercise (e g running, fast walking, swimming, aerobics, etc ..)?
0 1 2 3 4 5 6 7

5) Was this a typical week in terms of your pattern of activity or exercise? YES NO

6) Please check the statement that best describes your intent to exercise:
__ I do not exercise and I do not intend to change my exercise pattern.
__ I do not exercise, but I intend to start sometime in the next 6 months.
__ I do not exercise, but I intend to start in the next month.
__ I presently exercise and have been doing so for longer than one month.
__ I presently exercise and have been doing so for longer than six months.

7) Do you regularly monitor your food choice, calorie intake, or grams of fat? YES NO

8) For the past seven days, how many days did you eat five or more servings of a combination of vegetables and fruit each day? 0 1 2 3 4 5 6 7

9) Was this a typical week in terms of your pattern of food choice? YES NO

10) For the past seven days, how many days did you eat under the recommended percentage fat grams each day? 0 1 2 3 4 5 6 7

11) Was this a typical week in terms of your fat intake? YES NO

12) Please check the statement that best describes your food pattern
__ I do not monitor my food pattern and I do not intend to change my food pattern
__ I do not monitor my food pattern, but I intend to start sometime in the next 6 months.
__ I do not monitor my food pattern, I intend to start in the next month
__ I presently monitor food pattern and have been doing so for longer than one month
__ I presently monitor my food pattern and have been doing so for longer than six months.

Please rate your degree of confidence that you would engage in these behaviors or attitudes in the future on a scale of 0 (not confident at all) to 9 (extremely confident).

1) I can lose enough weight to get off the Weight Management Program.
0 1 2 3 4 5 6 7 8 9
2) I can exercise 3 times per week.
0 1 2 3 4 5 6 7 8 9
3) I can control my eating on the weekends.
0 1 2 3 4 5 6 7 8 9
4) I can resist eating before I go to bed.
0 1 2 3 4 5 6 7 8 9
5) I can exercise even when I had a long day at work.
0 1 2 3 4 5 6 7 8 9
6) I can decrease my fat intake.
0 1 2 3 4 5 6 7 8 9
7) I can resist eating when I watch TV
0 1 2 3 4 5 6 7 8 9
8) Stick to you exercise program even when your family is demanding more time of you. 0 1 2 3 4 5 6 7 8 9
9) I can increase my vegetable and fruit intake
0 1 2 3 4 5 6 7 8 9
10) Get up early, even exercise on weekends to exercise
0 1 2 3 4 5 6 7 8 9

Table 6

Questionnaire #2

Some of these questions are similar to the questions asked on the first questionnaire. Please rate your degree of confidence of how you feel right now if you were to engage in these behaviors or attitudes in the future on a scale of 0 (not confident at all) to 9 (extremely confident).

1) I can control my eating on the weekends.	0 1 2 3 4 5 6 7 8 9
2) I can resist eating even when I am reading	0 1 2 3 4 5 6 7 8 9
3) I can resist eating even when I have to say "no" to others.	0 1 2 3 4 5 6 7 8 9
4) I can resist even when there are high calorie foods available.	0 1 2 3 4 5 6 7 8 9
5) I can resist eating when I watch TV.	0 1 2 3 4 5 6 7 8 9
6) I can exercise 3 times per week.	0 1 2 3 4 5 6 7 8 9
7) I can decrease my fat intake.	0 1 2 3 4 5 6 7 8 9
8) I can resist eating even when I am in pain.	0 1 2 3 4 5 6 7 8 9
9) I can resist eating when there are many different kinds of foods available.	0 1 2 3 4 5 6 7 8 9
8) I can resist eating just before going to bed.	0 1 2 3 4 5 6 7 8 9
9) Stick to you exercise program even when your family is demanding more time of you	0 1 2 3 4 5 6 7 8 9
10) Stick to your exercise program even when you have excessive demands at work.	0 1 2 3 4 5 6 7 8 9
11) I can increase my vegetable and fruit intake	0 1 2 3 4 5 6 7 8 9
11) Set aside time for a physical activity program for at least 30 minutes three times per week.	0 1 2 3 4 5 6 7 8 9
12) Read or study less in order to exercise more.	0 1 2 3 4 5 6 7 8 9
13) Get up early, even exercise on weekends to exercise.	0 1 2 3 4 5 6 7 8 9
14) Exercise even though you are feeling depressed.	0 1 2 3 4 5 6 7 8 9
15) Stick to your exercise program after a long, tiring day at work.	0 1 2 3 4 5 6 7 8 9

16) I can lose enough weight to get off the
Weight Management Program 0 1 2 3 4 5 6 7 8 9

17) Please check the statement that best describes your food pattern.
__ I do not monitor my food pattern and I do not intend to change my food pattern.
__ I do not monitor my food pattern, but I intend to start sometime in the next 6 months
__ I do not monitor my food pattern, I intend to start in the next month
__ I presently monitor food pattern and have been doing so for longer than one month
__ I presently monitor my food pattern and have been doing so for longer than six months.

18) Please check the statement that best describes your intent to exercise·
__ I do not exercise and I do not intend to change my exercise pattern.
__ I do not exercise, but I intend to start sometime in the next 6 months.
__ I do not exercise, but I intend to start in the next month.
__ I presently exercise and have been doing so for longer than one month.
__ I presently exercise and have been doing so for longer than six months

Table 7

Questionnaire #3

Rank:_____
Age:_____Gender:_____
Height:_____Weight:_____
Race: White_____1
Black_____2
American Indian_____3
Hispanic_____4
Asian_____5
Other_____6
Marital Status Single Married Divorced Widowed

1) How many times have you been on the Weight Management Program?
Never Once Twice Three or more

3) How many pounds were you over the Maximum Allowable Weight?
0-5 6-10 11-15 15-20 21 or over

4) How many pounds are you over the Maximum Allowable Weight now?
0-5 6-10 11-15 15-20 21 or over

5) Do you regularly do strength and flexibility exercises like sit-ups, push-ups, weight lifting, yoga, or stretching? YES NO

6) How many days a week do you do at least 30 minutes moderate cardiovscular exercise (e.g. running, fast walking, swimming, aerobics, etc ..)?
0 1 2 3 4 5 6 7

7) Was this a typical week in terms of your pattern of activity or exercise? YES NO

8) Please check the statement that best describes your intent to exercise.
__ I do not exercise and I do not intend to change my exercise pattern.
__ I do not exercise, but I intend to start sometime in the next 6 months.
__ I do not exercise, but I intend to start in the next month.
__ I presently exercise and have been doing so for longer than one month.
__ I presently exercise and have been doing so for longer than six months.

9) Do you regularly monitor your food choice, calorie intake, or grams of fat? YES NO

10) For the past seven days, how many days did you eat five or more servings of a combination of vegetables and fruit each day? 0 1 2 3 4 5 6 7

11) Was this a typical week in terms of your pattern of food choice? YES NO

12) For the past seven days, how many days did you eat under the recommended percentage fat grams each day? 0 1 2 3 4 5 6 7

13) Was this a typical week in terms of your fat intake? YES NO

14) Please check the statement that best describes your food pattern.
__ I do not monitor my food pattern and I do not intend to change my food pattern
__ I do not monitor my food pattern, but I intend to start sometime in the next 6 months
__ I do not monitor my food pattern, I intend to start in the next month
__ I presently monitor food pattern and have been doing so for longer than one month
__ I presently monitor my food pattern and have been doing so for longer than six months.

<u>Please rate your degree of confidence of how you feel, right now after completing the Sensible Weigh Program, if you were to engage in these behaviors or attitudes in the future on a scale of 0 (not confident at all) to 9 (extremely confident)</u>

1) I can control my eating on the weekends 0 1 2 3 4 5 6 7 8 9
2) I can resist eating even when I am reading. 0 1 2 3 4 5 6 7 8 9
3) I can resist eating even when I have to say "no" to others. 0 1 2 3 4 5 6 7 8 9
4) I can resist even when there are high calorie foods available. 0 1 2 3 4 5 6 7 8 9
5) I can resist eating when I watch TV 0 1 2 3 4 5 6 7 8 9
6) I can exercise 3 times per week. 0 1 2 3 4 5 6 7 8 9
7) I can decrease my fat intake. 0 1 2 3 4 5 6 7 8 9
8) I can resist eating even when I am in pain. 0 1 2 3 4 5 6 7 8 9
9) I can resist eating when there are many different kinds of foods available. 0 1 2 3 4 5 6 7 8 9
8) I can resist eating just before going to bed. 0 1 2 3 4 5 6 7 8 9
9) Stick to you exercise program even when your family is demanding more time of you. 0 1 2 3 4 5 6 7 8 9
10) Stick to your exercise program even when you have excessive demands at work. 0 1 2 3 4 5 6 7 8 9
11) I can increase my vegetable and fruit intake 0 1 2 3 4 5 6 7 8 9

12) Set aside time for a physical activity program for at least 30 minutes three times per week	0 1 2 3 4 5 6 7 8 9
12) Read or study less in order to exercise more.	0 1 2 3 4 5 6 7 8 9
13) Get up early, even exercise on weekends to exercise	0 1 2 3 4 5 6 7 8 9
14) Exercise even though you are feeling depressed	0 1 2 3 4 5 6 7 8 9
15) Stick to your exercise program after a long, tiring day at work	0 1 2 3 4 5 6 7 8 9
16) I can lose enough weight to get off the Weight Management Program	0 1 2 3 4 5 6 7 8 9

Please return the completed questionnaire in the self-addressed envelope promptly. Thank you for participating in the study on behalf of the Wilford Hall Medical Center and the research team. We appreciate your input and hope to improve the program for your benefit. Feel free to make any comments below.

Table 8

Subject Consent Form

WILFORD HALL MEDICAL CENTER
INFORMED CONSENT DOCUMENT
(Form Version 3, 7/99)

Brief Motivational Techniques on Active-duty Personnel for the "Sensible Weigh Program": Perceived Self-efficacy, Intention to Change, and Actual Behavior Change.

You are being asked to consider participation in this research study. The purpose of this study is to determine the effectiveness of different teaching techniques for improving the Sensible Weigh Program.

This study will enroll 80 subjects at Wilford Hall Medical Center, over a period of 4 months and will require that you make one visit with the behavioral medicine team during your participation. It will not be necessary for you to return to WHMC. You have been selected to participate in this study because you have been determined over your maximum weight allowable and will be attending the Sensible Weigh Program.

RANDOMIZATION OF STUDY PARTICIPANTS:

You will be randomly assigned to one of two treatment plans. Randomization is a process like flipping a coin and means you will have a chance of being assigned to any of the plans.

The two types of teaching techniques are designed to guide you in behavior modification for weight loss. One of the teaching methods is the standard presentation and will include an overview of behavior modification and the approach will be didactic. The experimental teaching technique will also be educational but will be more interactive with the class and will be less directive.

PROCEDURES:

As a participant, you will undergo the following procedures:
At the actual intervention, researchers will distribute a folder to each of you with a corresponding number. Each folder consists of two sets of questionnaires and one adhesive label. All materials will be labeled with a single corresponding number for each of you. You will be asked to complete your address on the adhesive label and then the speaker will retrieve the envelopes. The speaker then will ask you to fill-out the first brief questionnaire that consists of the intention to change questions, behavior questions, and brie information questions. After you complete the first questionnaire, you will remain for the assigned intervention. After the 1 ½ hour class ends, you will be asked to open the folder and complete an additional questionnaire that focuses on intentions to change and its differences following the intervention. You will return the folder to the speaker as you leave the room. Approximately four weeks after the intervention, the researcher will mail the envelope with the address label to you with the final questionnaire to be completed. The final questionnaire resembles the first questionnaire. We ask that you return the final questionnaire to the researchers.

form will be completed at the time of the procedure.

RISKS OR DISCOMFORTS:

There are no foreseen risks associated with this study. If you are randomly selected to the experimental grou and feel the intervention was inadequate, a behavioral medicine professional will be available to you to review any material from the usual educational class format.

BENEFITS:

The possible benefit of your participation in this study is that we are able to find a more effective intervention for the Sensible Weigh Program and reduce the number of personnel discharged from the military due to weight management. We hope to further identify and explain the weight loss process. This study is intended to benefit you. At this time, it is not known if the most commonly accepted treatments achieve the best possible results. The investigators have designed this study to learn if the new treatment is as good as or better than or worse than the most commonly accepted treatments. However, there is no guarantee or promise that it will be as good as standard treatment or that you will receive any benefit from this study.

PAYMENT (COMPENSATION)
You will not receive any compensation (payment) for participating in this study.

ALTERNATIVE TREATMENT:
Alternative treatments may be available to you including the current behavioral/psychoeducation intervention or simply supportive care of concerns you are experiencing.

CONFIDENTIALITY OF RECORDS OF STUDY PARTICIPATION:
Records of your participation in this study may only be disclosed in accordance with federal law, including the Federal Privacy Act, 5 U.S.C. 552a, and its implementing regulations. DD Form 2005, Privacy Act Statement-Health Care Records, contains the Privacy Act Statement for the records. By signing this document, you give your permission for information gained from your participation in this study to be published in medical literature, discussed for educational purposes, and used generally to further medical science. You will not be personally identified; all information will be presented as anonymous data.

Your records may be reviewed by the U.S. Food & Drug Administration (FDA), other government agencies, and the WHMC Institutional Review Boards.

ENTITLEMENT TO CARE:
Your entitlement to medical and dental care and/or compensation in the event of injury is governed by federal laws and regulations, and if you have questions about your rights as a research subject or if you believe you have received a research-related injury, you may contact the

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Wilford Hall Medical Center Patient Representative, 210-292-6688 or Judge Advocate, 210-292-7808

Participation in this study does not alter your ongoing medical benefits as a military beneficiary, and you will continue to receive any needed medical treatment should you experience illness or injury as a result of this study. In the event of injury resulting from the investigational procedures, the extent of medical care provided is limited and will be within the scope authorized for DoD health care beneficiaries.

STATEMENT OF GOOD FAITH:
The investigator cannot guarantee or promise that you will receive benefits from this study; however, the investigator will keep you informed of any serious complications which may result from your participation in this study.

BLOOD & TISSUE SAMPLES:
No blood or tissue sample will be taken as a part of this study.

VOLUNTARY PARTICIPATION:
The decision to participate in this study is completely voluntary on your part. No one has coerced or intimidated you into participating in this project. You are participating because you want to. Christine Hunter and Jodi Scott has adequately answered any and all questions you have about this study, your participation, and the procedures involved. The principal investigator, Capt (Dr.) Christine Hunter or a member of the Clinical Health Psychology Service staff 210-292-5961 will be available to answer any questions concerning procedures throughout this study. If significant new findings develop during the course of this study that may relate to your decision to continue participation, you will be informed.

You may withdraw this consent at any time and discontinue further participation in this study without affecting your eligibility for care or any other benefits to which you are entitled. Should you choose to withdraw, you must attend the current behavior/psychoeducation intervention as part of your partial fulfillment of the Sensible Weigh Program . Your condition will continue to be treated in accordance with acceptable standards of medical treatment.

The investigator of this study may terminate your participation in this study at any time if he/she feels this to be in your best interest.

Your consent to participate in this study is given on a voluntary basis. All oral and written information and discussions about this study have been in English, a language in which you are fluent.

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